

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

**Claims 1-2 (Canceled)**

*Enter for 4/8/04*

1           **Claim 3 (Withdrawn):** A friction reducing ship, that reduces frictional  
2 resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising a  
3 bubble generation apparatus for generating micro-bubbles by creating a negative pressure  
4 state in a portion of water admitted from a water intake opening provided below a  
5 waterline in a bow section of the ship body so as to eject atmospheric air into the water  
6 and discharging the micro-bubbles together with the water to a water discharge opening  
7 provided in a bottom section of ship.

1           **Claim 4 (Withdrawn):** A friction reducing ship, that reduces frictional  
2 resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:  
3 a water transport passage provided on an external hull plate so as to extend from  
4 a water intake opening provided below a waterline in a bow section of the ship body to  
5 a water discharge opening provided in a bottom section of the ship body, and having an  
6 air discharge opening disposed partway along the passage;  
7 an air transport passage extending from above the water to the air discharge  
8 opening; and  
9 a gas ejection member protruding toward an inner side of the water transport

10 passage and provided in such a way to cover the air discharge opening having a gas  
11 ejection opening; wherein  
12 the air discharge opening is situated in a location such that a hydrostatic pressure  
13 at the air discharge opening is negative with respect to an atmospheric pressure existing  
14 above the water.

1 **Claim 5 (Withdrawn):** A friction reducing ship according to one of claim 3 or  
2 4, wherein the water discharge opening in the bottom section is located in a widthwise  
3 center in the vicinity of the bow section of the ship body.

1 **Claim 6 (Withdrawn):** A method for reducing frictional resistance of a ship  
2 body by creating a negative pressure state in a portion of water admitted from a water  
3 intake opening provided in a bow section of the ship body below a waterline so as to  
4 generate micro-bubbles by ejecting atmospheric air into the water and discharging the  
5 micro-bubbles together with the water to a water discharge opening provided in a bottom  
6 section of the ship body.

1 **Claim 7 (Withdrawn):** A method according to claim 6, wherein the water  
2 discharge opening in the bottom section is located in a widthwise center in the vicinity  
3 of the bow section of the ship body.

1 **Claim 8 (Previously presented):** A method for reducing frictional resistance of  
2 a ship body by

3               ejecting gas bubbles on a surface of the ship body submerged in water by creating  
4               in the water a negative pressure region having a pressure lower than a pressure in a  
5               gaseous space, resulting from the ship body cruising through a body of the water,  
6               directing a gas from the gaseous space to the negative pressure region in the  
7               water, and  
8               exerting inertial force on the gas bubbles at the negative region in a direction so  
9               as to detach the bubbles from a gas/liquid interface by providing the gas/liquid interface  
10              at a smoothly curved water passage,  
11              wherein the gas in the gaseous space is substantially at atmospheric pressure.

1               **Claim 9 (Previously presented):** A friction reducing ship, that reduces frictional  
2               resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:  
3               a negative pressure forming section for creating a negative pressure region in  
4               water having a lower pressure relative to a gaseous space;  
5               a fluid guiding passage for directing a gas from the gaseous space to the negative  
6               pressure region; and  
7               a detaching promotion section for exerting inertial force on the gas bubbles at the  
8               negative region in a direction so as to detach the bubbles from a gas/liquid interface by  
9               providing the gas/liquid interface at a smoothly curved water passage,  
10              wherein the gas in the gaseous space is substantially at atmospheric pressure.

1               **Claim 10 (Previously presented):** A friction reducing ship according to claim  
2               9, wherein the negative pressure forming section is comprised by a wing protruding into

3 the water from the submerged surface of the ship body; struts for supporting the wing;  
4 a flow guiding body disposed on a ship side of the wing.

1 **Claim 11 (Currently amended):** A friction reducing ship according to claim 10,  
2 wherein the detaching promotion section is comprised by the wing on a side of the ship  
3 body so as to have a U-shape, and the flow guiding body formed so as to follow a shape  
4 of the wing.

1 **Claim 12 (Withdrawn):** A friction reducing ship, that reduces frictional  
2 resistance by ejecting gas bubbles on a submerged surface of a ship body, comprising:  
3 a negative pressure forming section protruding from the submerged surface for  
4 creating a negative pressure region in a water relative to a gaseous space;  
5 a discharge opening for ejecting the gas bubbles towards the negative pressure  
6 region in the water;  
7 a fluid passage having one end open to the gaseous space and having other end  
8 open in the water by way of the discharge opening so as to direct a gas from the gaseous  
9 space into the water; wherein  
10 the discharge opening is disposed on an inclined surface inclined at an angle to  
11 the submerged surface of the ship body.

1 **Claim 13 (Withdrawn):** A friction ship according to claim 12, wherein the  
2 inclined surface is disposed in a depression provided on a submerged surface of a ship  
3 body to extend from an inner location to an outer location of the depression.

1           **Claim 14 (Previously presented):** A friction reducing ship, that reduces  
2           frictional resistance by ejecting gas bubbles on a submerged surface of a ship body,  
3           comprising:

4                 a negative pressure forming section protruding from the submerged surface for  
5           creating a negative pressure region in a water relative to a gaseous space;

6                 a detaching promotion section for exerting inertial force on the gas bubbles at the  
7           negative region in a direction so as to detach the bubbles from a gas/liquid interface by  
8           providing the gas/liquid interface at a smoothly curved water passage;

9                 a discharge opening disposed in a rear of the negative pressure forming section  
10          for ejecting gas bubbles towards the negative pressure region in the water;

11                a fluid passage having one end open to the gaseous space and having another end  
12          open in the water by way of the discharge opening so as to direct a gas from the gaseous  
13          space into the water; and

14                a gas supply apparatus for supplying the gas towards the negative pressure region,  
15          wherein the gas in the gaseous space is substantially at atmospheric pressure.

1           **Claim 15 (Previously presented):** A method for reducing frictional resistance  
2          by

3                ejecting gas bubbles on a submerged surface of a ship body by creating in a water  
4          a negative pressure region having a pressure lower than the pressure in a gaseous space,  
5          resulting from the ship body cruising through a body of the water,

6                exerting inertial force on the gas bubbles at the negative region in a direction so

7 as to detach the bubbles from a gas/liquid interface by providing the gas/liquid interface  
8 at a smoothly curved water passage,  
9 directing a gas from the gaseous space to the negative pressure region in the water  
10 so as to eject the gas bubbles into the body of the water, and  
11 supplying the gas to the negative pressure region by using a gas supply apparatus,  
12 wherein the gas in the gaseous space is substantially at atmospheric pressure.

1 **Claim 16 (Previously presented):** A method for reducing frictional resistance  
2 by  
3 ejecting gas bubbles on a submerged surface of a ship body by creating in a water  
4 a negative pressure region having a pressure lower than the pressure in a gaseous space,  
5 resulting from the ship body cruising through a body of the water,  
6 exerting inertial force on the gas bubbles at the negative region in a direction so  
7 as to detach the bubbles from a gas/liquid interface by providing the gas/liquid interface  
8 at a smoothly curved water passage,  
9 directing a gas from the gaseous space to the negative pressure region in the  
10 water, and  
11 generating a circulating flow of the water by using a wing to expand the negative  
12 pressure region,  
13 wherein the gas in the gaseous space is substantially at atmospheric pressure.

1 **Claim 17 (Previously presented):** A friction reducing ship, that reduces  
2 frictional resistance by ejecting gas bubbles on a submerged surface of a ship body,

3 comprising:

4 a negative pressure forming section protruding from the submerged surface for  
5 creating a negative pressure region in a water relative to a gaseous space;

6 a detaching promotion section for exerting inertial force on the gas bubbles at the  
7 negative region in a direction so as to detach the bubbles from a gas/liquid interface by  
8 providing the gas/liquid interface at a smoothly curved water passage;

9 a discharge opening disposed in a rear of the negative pressure forming section  
10 for ejecting the gas bubbles towards the negative pressure region in the water;

11 a fluid passage having one end open to the gaseous space and having other end  
12 open in the water by way of the discharge opening so as to direct a gas from the gaseous  
13 space into the water;

14 wherein the negative pressure forming section is provided with a wing shaped  
15 component whose cross sectional shape is formed in a wing shape; and

16 wherein the gas in the gaseous space is substantially at atmospheric pressure.

1 **Claim 18 (Original):** A friction reducing ship according to claim 17, wherein  
2 the wing shaped component is disposed so as to generate an uplifting force.

1 **Claim 19 (Withdrawn):** A friction reducing ship, that reduces frictional force by  
2 ejecting gas bubbles on a submerged surface of a ship body, comprising:

3 a discharge opening disposed on the submerged surface for ejecting the gas  
4 bubbles into a water;

5 a fluid passage having one end open to the gaseous space and have other end open

6        in the water by way of the discharge opening so as to direct a gas from the gaseous space  
7        into the water; wherein  
8                at least a portion of the fluid passage is comprised by component members to  
9        form outer shell of the ship body.

1                **Claim 20 (Withdrawn):** A friction reducing ship according to claim 19, wherein  
2        at least a portion of the component member forming the fluid passage comprise a  
3        reinforcing component member of the ship body.

1                **Claim 21 (Withdrawn):** A friction reducing ship according to one of claim 19  
2        or 20, wherein the fluid passage is divided into a plurality of passages.